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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/594,510	06/16/2000	Alan G. Wood	M4065.0184/P184	2407

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EXAMINER

LUU, CHUONG A

ART UNIT PAPER NUMBER

2825

DATE MAILED: 12/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/594,510

Applicant(s)

WOOD ET AL.

Examiner

Chuong A Luu

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 and 35-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 35-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

Applicant's arguments with respect to claims 1-23 and 35-38 have been considered but are moot in view of the new ground(s) of rejection.

### **PRIOR ART REJECTIONS**

#### **Statutory Basis**

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

#### **The Rejections**

Claims 1-19 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kata et al. (U.S. 5,897,337) in view of Heo (US 6,389,689 B2)

Kata discloses a method of manufacturing a semiconductor device by

(1); (11); (19); (35) forming a layered assembly by attaching a wafer (40) and an electrode pad (41) to a dielectric layer (43) (see Figure 8A-8B);

connecting semiconductor devices in said semiconductor wafer (40) to ball

grid arrays (44) on said dielectric layer (see Figure 8C);

subsequently, dicing said layered assembly (see column 7, lines 8-59);

wherein said step of forming said layered assembly includes the step of adhering said wafer to said dielectric layer (see Figure 8B);

(6) further comprising the step of electrically connecting said semiconductor devices to ball grid arrays (44) on said dielectric layer (43) (see Figure 8D);

(8) wherein said connecting step comprises the step of connecting solder bumps on said wafer to circuit traces on said dielectric layer (see column 7, lines 56-59);

(10) further comprising the step of providing an electrode pad in said layered assembly (see Figure 8A);

(12) wherein said forming step comprises the step of adhering said wafer (40) to said electrode pad (41) (see Figure 8A-8B);

Kata teaches the above outlined features except for testing, input/output devices. However, Heo discloses a method for fabricating semiconductor package by (2) further comprising the step of connecting said semiconductor devices to input/output devices on the dielectric layer; (3) wherein said testing is conducted through said input/output devices (see columns 1 and 3, lines 14-54 and lines 24-27, respectively); (4); (36); (38) further comprising the step of discarding one or more defective packages (see columns 4 and 5, lines 15-20 and lines 20-27, respectively); (9); (17) wherein said dicing step is performed by a saw (see column 4, lines 40-46); (18) further comprising the step of testing said semiconductor devices through said ball grid arrays (see column 1, lines 18-30); (7); (13); (14) wherein said connecting step comprises the step of locating wire bonds in openings through said dielectric layer (see column 4, lines 21-32); (15) wherein said connecting step comprises the step of connecting solder bumps

on said wafer to conductive traces on said dielectric layer (see column 4, lines 21-32);  
(16) further comprising the step of connecting said traces to conductive vias extending through said dielectric layer (see columns 3 and 4, lines 58-67 and lines 1-32, respectively. Figures 3c-3f). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings above to apply an input/output device, to discarding one or more defective chip, dicing semiconductor chips by sawing to conduct testing a semiconductor device.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kata et al. (U.S. 5,897,337) in view of Heo (US 6,389,689 B2) and further in view of Gaynes et al. (U.S. 6,165,885)

Kata and Heo teach the above outlined features except for optically aligned. However, Gaynes discloses a method of making components with solder balls by (20) wherein said wafer is optically aligned with respect to said dielectric tape (see column 16, lines 18-29). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings above by optically aligned semiconductor components to manufacture integrated circuit devices.

Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kata et al. (U.S. 5,897,337) in view of Heo (US 6,389,689 B2) and further view of Huddleston et al. (U.S. 5,834,320)

Kata and Heo teach everything above except for magnetically aligned with a magnet ring. Furthermore, Huddleston discloses a method of assembling a semiconductor device using a magnet (see columns 7 and 8, lines 44-67 and lines 1-51, respectively). It would have been obvious to one having ordinary skill in the art at the time the invention was made to magnetically align with a magnet ring to form a semiconductor device.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-23 and 35-38 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that Kata fails to disclose or suggest a "stiff metal layer". However, Kata discloses a method of manufacturing a semiconductor device by using a metal layer (see column 4, lines 14-20). It would have been obvious to one having ordinary skill in the art to recognize that metal has certain stiffness property.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong A Luu whose telephone number is (703)305-0129. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (703)308-1323. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

CAL

December 23, 2002

  
VUTHE SIEK  
PRIMARY EXAMINER